



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE

United States Patent and Trademark Office

Address: COMMISSIONER FOR PATENTS

P.O. Box 1450

Alexandria, Virginia 22313-1450

www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/540,476	02/13/2006	Yasuhiro Suzuki	46884-5393 (211706)	2777
23973 7590 12/10/2008 DRINKER BIDDLE & REATH ATTN: INTELLECTUAL PROPERTY GROUP ONE LOGAN SQUARE 18TH AND CHERRY STREETS PHILADELPHIA, PA 19103-6996				
EXAMINER KO, TONY				
ART UNIT		PAPER NUMBER		
2878				
MAIL DATE		DELIVERY MODE		
12/10/2008		PAPER		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

# Office Action Summary

**Application No.**

10/540,476

**Applicant(s)**

SUZUKI ET AL.

**Examiner**

TONY KO

**Art Unit**

2878

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-7 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-7 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 February 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SF/ICE)  
Paper No(s)/Mail Date 6/23/05, 10/10/08
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_

## DETAILED ACTION

### *Specification*

1. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

### *Claim Rejections - 35 USC § 112*

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 1-7 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
4. Claim 1 recites the limitation "the input and output terminal" in lines 11 and 13. There is insufficient antecedent basis for this limitation in the claim.
5. Claims 2-7 are rejected because of their dependency upon rejected claim.

### *Claim Rejections - 35 USC § 102*

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

7. Claims 1- 3, 5 and 6 are rejected under 35 U.S.C. 102(e) as being anticipated by Mizuno (WO 02/12845). For examining purpose, Examiner refers to the corresponding US Patent 7,286,172)
8. Regarding claim 1, as understood, Mizuno teaches A photodetector comprising: N photodiodes (100<sub>1</sub> to 100<sub>M</sub>) each generating an electric charge by an amount corresponding to an intensity of light incident thereon; N electric charge amount level determining circuits (20), respectively arranged so as to correspond to the N photodiodes, for determining respective levels of amounts of electric charges generated in the photodiodes and outputting respective level signals indicative of results of level determinations; an integrating circuit (10) including an integral capacitance part having a variable capacitance value (see figure 2, where Cf11 and Cf12 results in different capacitance when switches SW10-SW12 changes by means of 30, capacitance setting circuit), which is set according to the level signal (30 is controlled by charge level determination circuit 20), accumulating an electric charge fed from the input terminal into the integral capacitance part (10), and outputting a voltage corresponding to an amount of the accumulated electric charge, from the output terminal; first switches (SWs, see figure 1) respectively provided so as to correspond to the N photodiodes, and arranged between the respective photodiodes and the input terminal of the integrating circuit; and second switches (SW13) respectively provided so as to correspond to the N electric charge amount level determining circuits, and arranged between the respective electric charge amount level determining circuits and the integral capacitance part.

9. Regarding claims 2 and 3, Mizuno teaches A/D converter circuit (40) for inputting the voltage outputted from the output terminal of the integrating circuit, A/D-converting the voltage into a digital value corresponding to the voltage, and outputting the digital value and further comprising a shift circuit (200) for inputting the digital value outputted from the A/D converter circuit, shifting a bit of the digital value according to the level signal, and outputting the digital value having the shifted bit . (Col. 6, line 35)
10. Regarding claim 5, Mizuno teaches a control circuit (300) for controlling opening and closing of each of the first and second switches; wherein, for each of the N photodiodes, the control circuit (300) closes the second switch and, after the capacitance value of the integral capacitance part is set according to the level signal outputted from the electric charge amount level determining circuit corresponding to the photodiode, closes the first switch corresponding to the photodiode. (Col. 14 – Col. 15 line 60)
11. Regarding claim 6, Mizuno teaches M sets each composed of the N photodiodes, the N electrical charge amount level determining circuits, and the integrating circuit. (See fig. 1)

***Allowable Subject Matter***

12. Claims 4 and 7 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.
13. The following is a statement of reasons for the indication of allowable subject matter: prior art does not teach wherein the shift circuit shifts the digital value by p bits

according to the level signals. Regarding claim 7, prior art does not teach wherein the first and second substrate are connected to each other with a bump, the photodiodes and the first switches corresponding thereto are electrically connected to each other, and the photodetectors and the electrical charge amount level determining circuit corresponding thereto are electrically connected to each other.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to TONY KO whose telephone number is (571)272-1926. The examiner can normally be reached on Monday-Friday 7:30 - 4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Georgia Epps can be reached on 571-272-2328. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Application/Control Number: 10/540,476  
Art Unit: 2878

Page 6

TKO  
/Tony Ko/  
Examiner, Art Unit 2878